



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2021-1004; Project Identifier MCAI-2021-00480-E; Amendment 39-22030; AD 2022-09-10]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce Deutschland Ltd & Co KG (Type Certificate previously held by Rolls-Royce plc) Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for all Rolls-Royce Deutschland Ltd & Co KG (RRD) RB211 Trent 875-17, 877-17, 884-17, 884B-17, 892-17, 892B-17, and 895-17 model turbofan engines. This AD was prompted by findings during engine overhaul of corrosion on the low-pressure compressor (LPC) front case assembly. This AD requires inspection of the LPC front case assembly and, depending on the result of the inspection, accomplishment of the applicable corrective action(s), as specified in a European Union Aviation Safety Agency (EASA) AD, which is incorporated by reference. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: For material incorporated by reference in this AD, contact EASA, Konrad-Adenauer-Ufer 3, 50668 Cologne, Germany; phone: +49 221 8999 000; email: ADs@easa.europa.eu. You may find this material on the EASA website at <https://ad.easa.europa.eu>. You may view this material at the FAA, Airworthiness

Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110. It is also available at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-1004. For RRD service information identified in this AD, contact Rolls-Royce plc, Corporate Communications, P.O. Box 31, Derby, DE24 8BJ, United Kingdom; phone: +44 (0)1332 242424 fax: +44 (0)1332 249936; website: <https://www.rolls-royce.com/contact-us.aspx>.

Examining the AD Docket

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-1004; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the EASA AD, any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: Nicholas Paine, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7116; email: nicholas.j.paine@faa.gov.

SUPPLEMENTARY INFORMATION:

Background

EASA, which is the Technical Agent for the Member States of the European Union, has issued EASA AD 2021-0114, dated April 23, 2021 (EASA AD 2021-0114), to address an unsafe condition for certain RRD RB211 Trent 875-17, 877-17, 884-17, 884B-17, 892-17, 892B-17, and 895-17 model turbofan engines.

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to RRD RB211 Trent 875-17, 877-17, 884-17, 884B-17, 892-17, 892B-17, and 895-17 model turbofan engines. The NPRM published in the *Federal Register* on November 16, 2021 (86 FR 63319). The NPRM was prompted by findings during engine overhaul of corrosion on the LPC front case assembly caused by excessive movement between the Kevlar wrap and the fan case, which resulted in the

anti-corrosion paint fretting away. In the NPRM, the FAA proposed to require the performance of all required actions within the compliance times specified in, and in accordance with EASA AD 2021-0114, except for any differences identified as exceptions in the regulatory text of this AD and except as discussed under “Differences Between this Proposed AD and the EASA AD.” The FAA is issuing this AD to address the unsafe condition on these products. See EASA AD 2021-0114 for additional background information.

Discussion of Final Airworthiness Directive

Comments

The FAA received comments from three commenters. The commenters were American Airlines (American), The Boeing Company (Boeing), and Rolls-Royce plc (RR). The following presents the comments received on the NPRM and the FAA's response to each comment.

Request to Revise Applicability

American requested that the FAA revise paragraph (c), Applicability, of this AD to replace “as identified in EASA AD 2021-0114” with “RB211 Trent 875-17, 877-17, 884-17, 884B-17, 892-17, 892B-17 and 895-17 engines with Low Pressure (LP) Compressor front (fan) case assemblies having Part Number (P/N) FK33097, P/N FK26850, P/N FK26853, P/N FK26915, P/N FK26692 or P/N FK28577.” American stated that certain engines identified in the EASA AD applicability section have already performed rework on the LPC front case assembly to provide additional corrosion protection using RR RB211 Trent 800 Series Propulsion Systems Service Bulletin (SB) RB.211-72-G634 (RR SB RB.211-72-G634) or RR RB211 Trent 800 Series Propulsion Systems SB RB.211-72-G856 (RR SB RB.211-72-G856) and the LPC front case assembly subsequently received a new P/N. American explained that, in addition to the new LPC front case assembly introduced by RR SB RB.211-72-G581, the new reworked LPC front case assembly P/Ns are not identified in the affected part list of the EASA AD.

The FAA disagrees with revising paragraph (c), Applicability of this AD. Paragraph (c) lists engines affected by this AD and refers to EASA AD 2021-0114, which identifies the affected P/Ns of the LPC front case assemblies. The Credit paragraph

(4) in EASA AD 2021-0114 provides, “Corrective action(s) on an engine, accomplished in accordance with the instructions of Rolls-Royce SB RB.211-72-G634 or SB RB.211-72-G856, are acceptable to comply with the requirements of paragraph (2) of this [EASA] AD for that engine.” The FAA notes that this AD requires compliance with EASA AD 2021-0114 in its entirety, including any credit for previous actions. The FAA did not change this AD as a result of this comment.

Request to Revise Exceptions to EASA AD Paragraph

RR requested that the FAA revise paragraph (h)(3) of this AD to ensure consistency with the Credit paragraph in EASA AD 2021-0114 or to provide an alternative means to accomplish the same intent. RR explained that the service information cited in EASA AD 2021-0114 requires inspecting the affected part and contacting the manufacturer for repair instructions if corrosion exceeds the criteria in RR Alert Non-Modification Service Bulletin (NMSB) RB.211-72-G774. RR also explained that the NPRM proposed to require the removal of an affected LPC front case assembly if corrosion exceeds the criteria in RR Alert NMSB RB.211-72-G774. RR noted that this difference is inconsistent with the Credit paragraph of the EASA AD.

In response to this comment the FAA has revised paragraph (h)(3) of this AD to include a repair option for the LPC front case assembly in lieu of removal. This revision allows operators to repair the affected LPC front case assembly using a method approved by the Manager, International Validation Branch, FAA; or EASA; or Rolls-Royce's EASA Design Organization Approval (DOA). The FAA has also updated the Estimated Costs section of this preamble to include the estimated costs for repairing the LPC front case assembly.

Support for the AD

Boeing expressed support for the AD as written.

Conclusion

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting this AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on these products. Except for minor editorial changes and an update to the language in paragraph (h)(3), this AD is adopted as

proposed in the NPRM. None of the changes will increase the economic burden on any operator.

Related Service Information under 1 CFR Part 51

The FAA reviewed EASA AD 2021-0114. EASA AD 2021-0114 specifies instructions for inspecting the LPC front case assembly and, depending on the result of the inspection, corrective action. This material is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

Other Related Service Information

The FAA reviewed Rolls-Royce RB211 Trent 800 Series Propulsion Systems Alert NMSB RB.211-72-AG774, Revision 4, dated October 13, 2020 (the NMSB). The NMSB specifies procedures for inspecting the LPC front case assembly for corrosion and taking corrective action.

Costs of Compliance

The FAA estimates that this AD affects 98 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this AD:

Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
Perform ultrasonic inspection	8 work-hours x \$85 per hour = \$680	\$0	\$680	\$66,640
Rework the LPC front case assembly	200 work-hours x \$85 per hour = \$17,000	\$18,724	\$35,724	\$3,500,952

The FAA estimates the following costs to do any necessary replacement or repair that would be required based on the results of the inspection. The agency has no way of determining the number of aircraft that might need this replacement or repair:

On-condition costs

Action	Labor Cost	Parts Cost	Cost per product
Replace the LPC front case assembly	140 work-hours x \$85 per hour =	\$932,000	\$943,900

	\$11,900		
Repair the LPC front case assembly	200 work-hours x \$85 per hour = \$17,000	\$18,724	\$35,724

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA’s authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency’s authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

2022-09-10 Rolls-Royce Deutschland Ltd & Co KG (Type Certificate previously held by Rolls-Royce plc): Amendment 39-22030; Docket No. FAA-2021-1004; Project Identifier MCAI-2021-00480-E.

(a) Effective Date

This airworthiness directive (AD) is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to Rolls-Royce Deutschland Ltd & Co KG (RRD) (Type Certificate previously held by Rolls-Royce plc) RB211 Trent 875-17, RB211 Trent 877-17, RB211 Trent 884-17, RB211 Trent 884B-17, RB211 Trent 892-17, RB211 Trent 892B-17, and RB211 Trent 895-17 model turbofan engines, as identified in EASA AD 2021-0114, dated April 23, 2021 (EASA AD 2021-0114).

(d) Subject

Joint Aircraft System Component (JASC) Code 7230, Turbine Engine Compressor Section.

(e) Unsafe Condition

This AD was prompted by findings during engine overhaul of corrosion on the low-pressure compressor (LPC) front case assembly caused by excessive movement between the Kevlar wrap and the fan case, which resulted in the anti-corrosion paint fretting away. The FAA is issuing this AD to address corrosion on the LPC front case assembly. The unsafe condition, if not addressed, could result in reduced integrity of the LPC front case assembly during a fan blade release, resulting in damage to the airplane or reduced control of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

Except as specified in paragraph (h) of this AD: Perform all required actions within the compliance times specified in, and in accordance with EASA AD 2021-0114.

(h) Exceptions to EASA AD 2021-0114

(1) Where EASA AD 2021-0114 requires compliance from its effective date, this AD requires using the effective date of this AD.

(2) Where EASA AD 2021-0114 defines a qualified shop visit as “any scheduled shop visit where the affected part is exposed and substantial rebuild has not yet started, except shop visits for serviceability only,” for this AD replace that phrase with “the induction of an engine into the shop after the effective date of this AD for maintenance involving the separation of pairs of major mating engine flanges, with the exception of the separation of engine flanges solely for the purposes of transportation of the engine without subsequent engine maintenance, which does not constitute an engine shop visit.”

(3) Where paragraph (3) of EASA AD 2021-0114 specifies “if, during the inspection as required by paragraph (1) of this AD, any corrosion is found exceeding the criteria as specified in the NMSB, before release to service of the engine, contact Rolls-Royce for approved repair instructions and accomplish those instructions accordingly,” for this AD replace that phrase with “remove the affected LPC front case assembly from service if corrosion is found that exceeds the criteria specified in Appendix 2 of the NMSB.” In lieu of removal of the affected LPC front case assembly, operators may repair the affected LPC front case assembly using a method approved by the Manager, International Validation Branch, FAA; or EASA; or Rolls-Royce's EASA Design Organization Approval (DOA). If approved by the DOA, the approval must include the DOA-authorized signature.

(4) This AD does not mandate compliance with the “Remarks” section of EASA AD 2021-0114.

(i) No Reporting Requirement

Although the service information referenced in EASA AD 2021-0114 specifies to submit certain information to the manufacturer, this AD does not include that requirement.

(j) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ECO Branch, send it to the attention of the person identified in paragraph (k) of this AD. Information may be emailed to: ANE-AD-AMOC @faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(k) Related Information

For more information about this AD, contact Nicholas Paine, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7116; email: nicholas.j.paine@faa.gov.

(l) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless this AD specifies otherwise.

(i) European Union Aviation Safety Agency (EASA) AD 2021-0114, dated April 23, 2021.

(ii) [Reserved]

(3) For more information about EASA AD 2021-0114, contact EASA, Konrad-Adenauer-Ufer 3, 50668 Cologne, Germany; phone: +49 221 8999 000; email: ADs@easa.europa.eu. You may find this material on the EASA website at <https://ad.easa.europa.eu>.

(4) You may view this material at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110. This material may be found in the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-1004.

(5) You may view this material that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, email: fr.inspection@nara.gov, or go to <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on May 13, 2022.

Gaetano A. Sciortino, Deputy Director for Strategic Initiatives,
Compliance & Airworthiness Division,
Aircraft Certification Service.

[FR Doc. 2022-10755 Filed: 5/18/2022 8:45 am; Publication Date: 5/19/2022]